

Modified Robert-Jones Bandage Application to a Pointer Puppy with Carpal Laxity Syndrome

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Abstract : A 5-month-old, intact female pointer weighing 13 kg was referred for diagnosis and treatment of bilateral thoracic limb hyperflexion without trauma. After physical and radiographic examination, carpal laxity syndrome was diagnosed. A modified Robert-Jones bandage was applied and cage rest, including general puppy food, was prescribed for 3 weeks. The patient acquired normal gait with weight bearing, with non-remarkable findings on radiographic examination. The modified Robert-Jones bandage was sufficient to treat carpal laxity syndrome in this case.

Key words : carpal laxity syndrome, modified Robert-Jones bandage, pointer.

Introduction

Carpal laxity syndrome, also known as developing carpal deformity, carpal conundrum, carpal flexural deformity, carpal hyperextension, carpal hyperflexion, or carpal flexion syndrome, is a common disease acquired unilaterally or bilaterally in 6- to 12-week-old puppies of medium to giant breeds, especially Doberman Pinschers, German Shepherds, and Great Danes (1-3). However, the same disease also occurs frequently in foals, calves, piglets, and lambs (4,5). Although the cause is uncertain, it may be due to an unbalanced growth rate between the bone and tendon (2). Other suspected causes include inappropriate nutrition (2,3), hereditary factors, or breed predisposition (4).

Diagnosis can be achieved through history, physical examination, or radiographic examination (6). However, in most cases, radiographic examination reveals no remarkable findings (4,7). Furthermore, laboratory investigations reveal no changes in calcium, phosphorus, or magnesium levels (4). Recommended conservative treatment includes splint or casting, with nearly all cases achieving normal gait on a suitable traction floor within 4 weeks (2,6). Additionally, swimming may also be recommended (6); however, tenotomy or arthrodesis may be necessary in late-diagnosed or severe cases (4,6). Prognosis is almost always favorable (2,8).

Case

A 5-month-old, intact female pointer weighting 13 kg was referred to the Konkuk Veterinary Medical Teaching Hospital (Seoul, South Korea) for diagnosis and treatment of bilat-

eral thoracic limb hyperflexion. The patient lived in the outdoor environment and was fed with general puppy pellet. Clinical signs were apparent for 2 months and began mildly without trauma. At that time, severe diarrhea because of parvo viral infection was observed. The local animal clinic treated the parvo viral infection, diagnosed the dog with ricketts, and prescribed calcium and vitamin supplementation; however, the abnormal gait persisted.

On physical examination, hyperflexion and hyperabduction of the carpus, without pain, edema or crepitus, were observed (Fig 1A). Range of motion was normal at the carpal joint and abnormal neurological signs were absent. On gait observation, weight bearing on the ventrolateral surface of the forelimb digits were observed. On radiographic examination, periosteal change at the left proximal radius and a mild increase in opacity at the bilateral distal ulnar physis were apparent (Fig 1B). Laboratory findings were non-remarkable. After possible disease was ruled out by examination, it was diagnosed as carpal flexural deformity.

As treatment, a modified Robert-Jones bandage, encompassing the elbow but allowing walking, was applied and cage rest was prescribed. Splint or cast was not applied. The dressing was changed every week and gait was evaluated. General puppy food was supplied to prevent the excess of calcium. After 3-weeks application of Robert-Jones bandage, gait was improved and bandage was removed (Fig 2A). The patient underwent normal gait to support weight. Radiologic examination showed increased muscle mass and no other remarkable findings were observed (Fig 2B). After 6 months of follow-up, the gait of the patient was normal.

Discussion

The differential diagnosis of juvenile orthopedic disease in young, large-breed dogs must include osteochondrosis, hyper-

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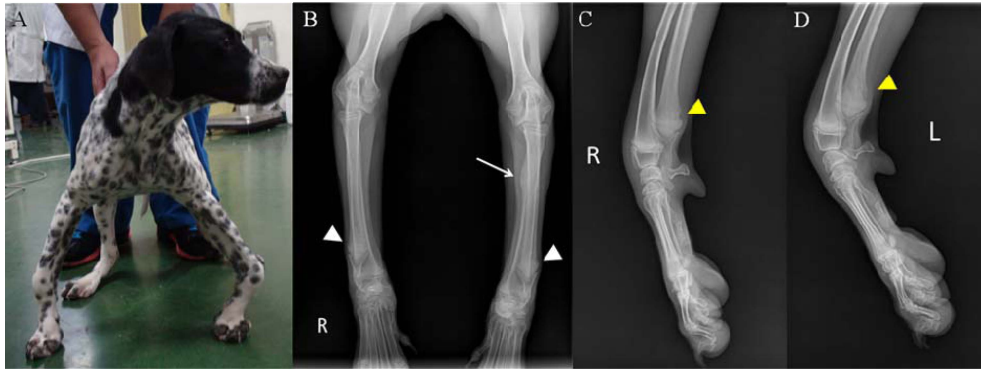


Fig 1. Posture of the patient at presentation. Hyperflexion and hyperabduction of the carpus is apparent (A). Radiographic examination at presentation (B-D). Anteroposterior view of the forelimbs. Periosteal change at the left proximal radius (arrow) and mild elevation of opacity at the bilateral distal ulnar physis (arrow heads) (B). Right forelimb (C). Left forelimb (D). The periosteal changes were worse on the left side (yellow arrow heads).

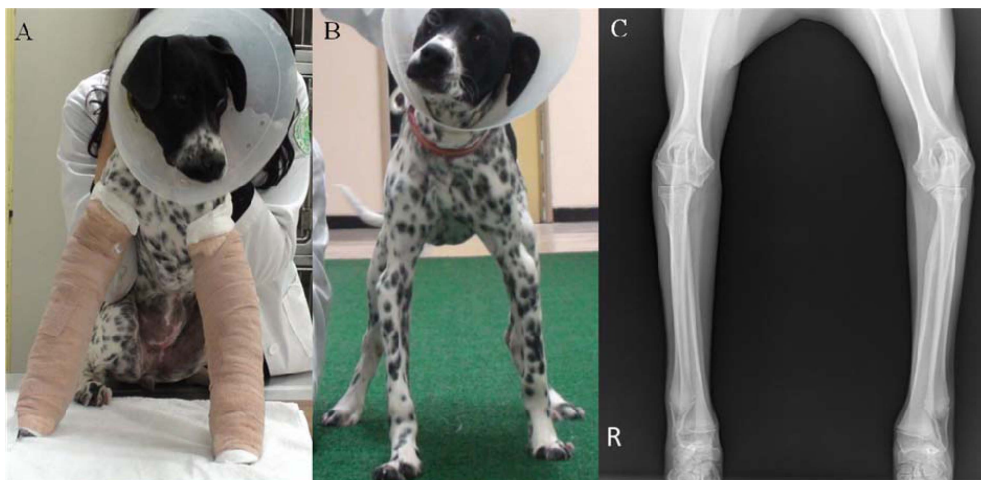


Fig 2. Posture after bilateral application of the modified Robert-Jones bandage (A). After 3 weeks of treatment, normal posture and gait with weight bearing was observed (B). Non-remarkable findings were observed on radiographic examination (C).

trophic osteodystrophy, and panosteitis (1,3,9). Osteochondrosis is a disorder of developing cartilage and presents with lameness and a swollen, painful joint (3). Hypertrophic osteodystrophy is characterized by painful swelling of the metaphyseal region of the long bone, with the physis parallel to the radiolucent line in the metaphyseal region on radiography. Panosteitis is a self-limiting disease of the long bones and is characterized by shifting leg lameness and pain on palpation of the long bones. On radiography, cortical bone opacities within the medullary canal are apparent (9). In this study, the patient had no pain in the long or carpal bone, and non-remarkable findings on radiography, except for mild periosteal changes related to disease.

The suspected causes of panosteitis are malnutrition, poor footing, and improper exercises that induce weakness or irregular tension between the extensor and flexor muscle groups (8). In this case, the presumed reason for carpal laxity syndrome was parvo viral infection, which was initially treated with unbalanced nutrition including excess calcium.

The Robert-Jones bandage and its modifications to the distal elbow and stifle are the most commonly used bandages in

veterinary medicine (10). As treatment for carpal laxity syndrome in equine medicine, application of the Robert-Jones bandage with splint for 4 weeks in a restricted cage is recommended; the splint is then removed, and the bandage is continued for an additional 4 weeks (7). However, complications of Robert-Jones bandage treatment are topical sores associated with splint pressure. Therefore, not only is sufficient padding with splint necessary, but topical wound care must be considered during the initial period (7). In small animal medicine (8), splinting or casting is controversial because it can induce muscle weakness. Although the modified Robert-Jones bandage uses less cotton than the original Robert-Jones bandage, it is still capable of providing compression (8). In the present case, the patient recovered to normal gait in three weeks, because the modified Robert-Jones bandage gave enough support to allow for normal gait softly without causing muscle atrophy.

In equine practice, additional daily swimming or non-steroidal anti-inflammatory drugs may be recommended as part of therapy. Additionally, intravenous oxytetracycline can be administered because it induces inhibition of collagen gel

contraction and decreases matrix metalloproteinase 1 messenger RNA expression by equine myofibroblasts in a dose-dependent manner (7).

Carpal laxity syndrome in a young pointer puppy with parvo viral infection was diagnosed. The patient recovered by 3 weeks application of the modified Robert-Jones bandage and cage rest.

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